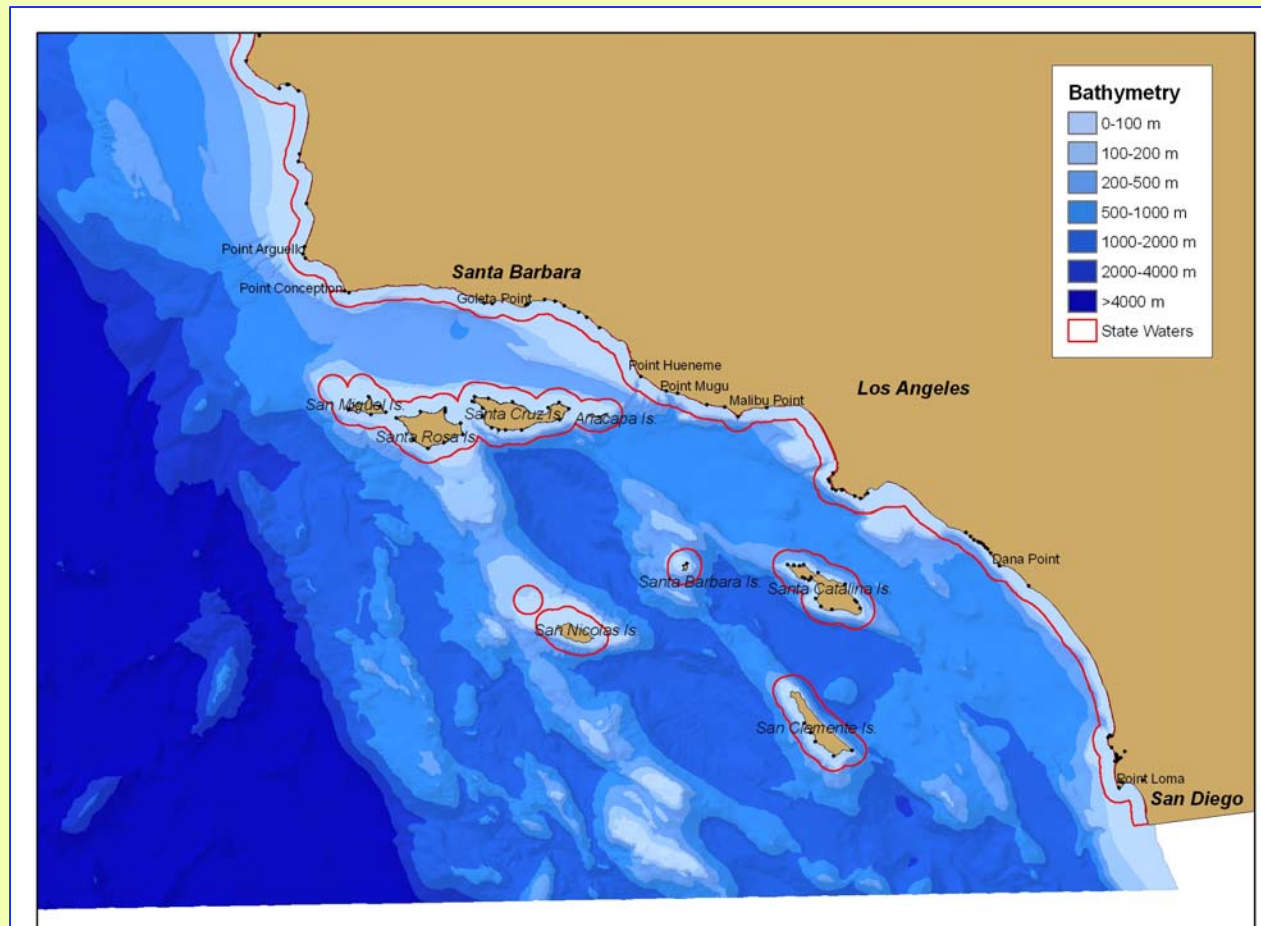


Southern California Oceanography MLPA South Coast Study Region



Oceanography Workshop
September 16, 2008 • El Segundo, CA
John Largier • Bodega Marine Lab

Developing an Oceanographic Perspective for MLPA in S California

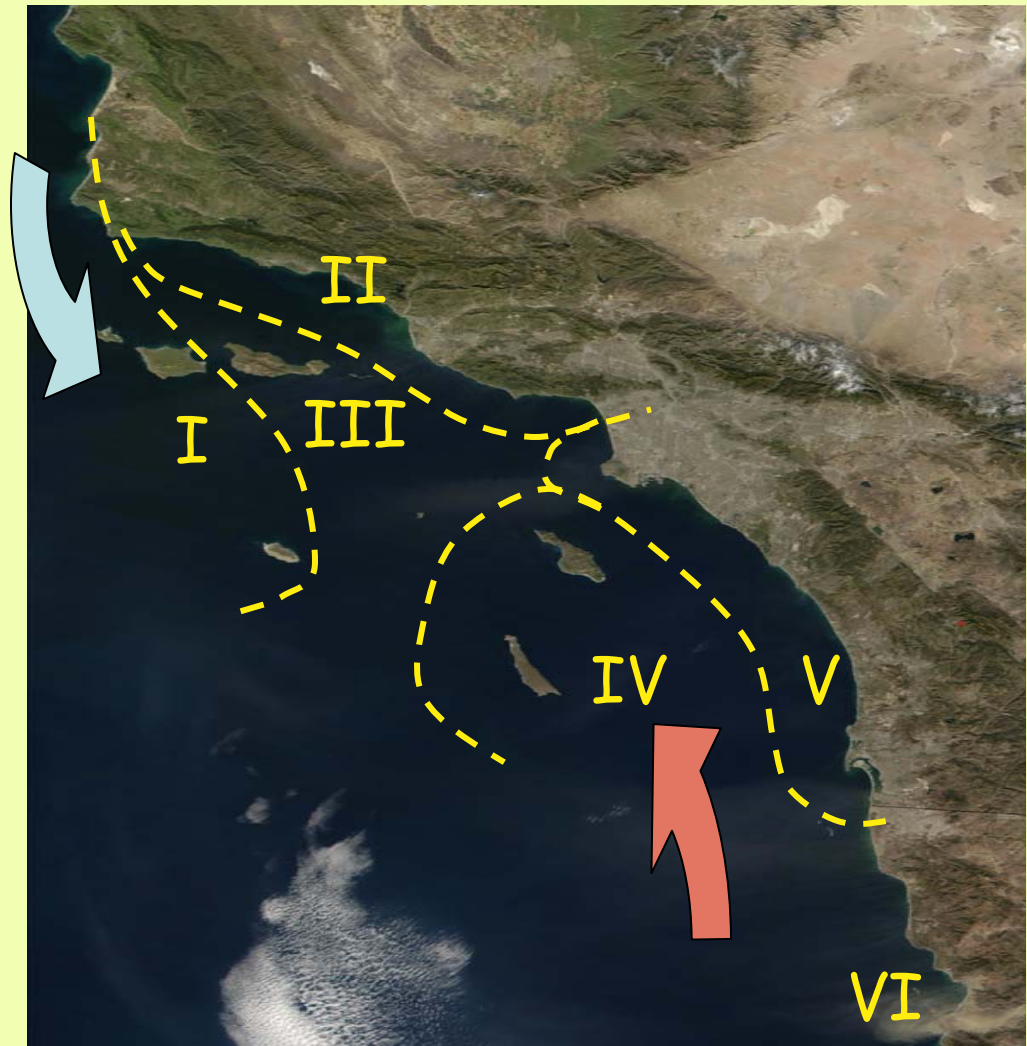


What can we do with models & cartoons?

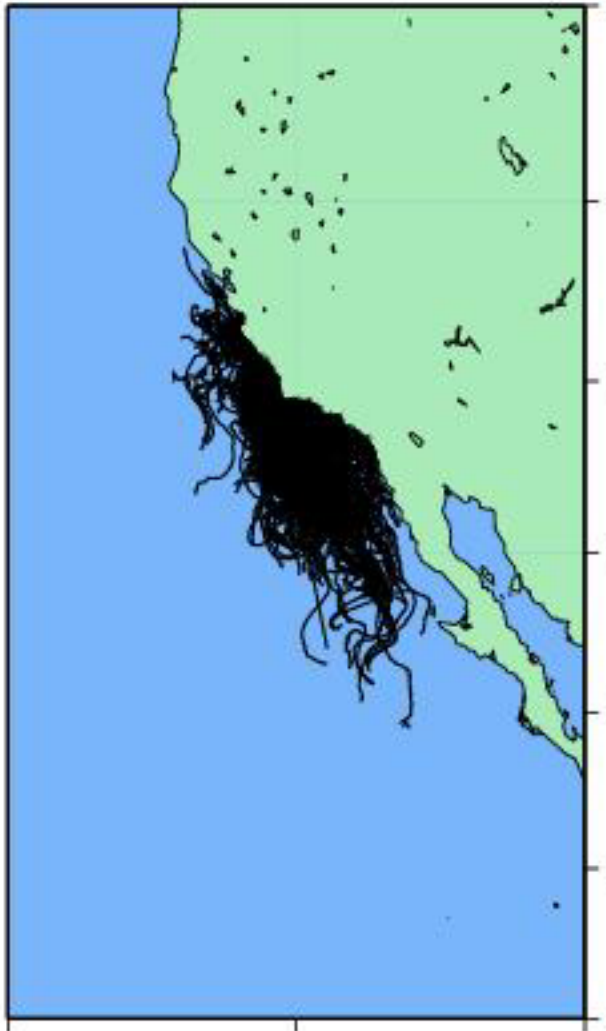
Developing an Oceanographic Perspective for MLPA in S California

-- Currents & Connectivity

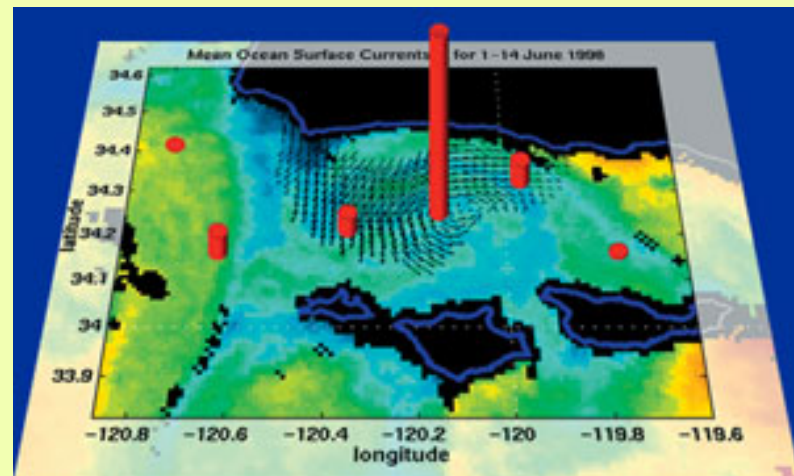
-- Water type & Habitat



Connectivity



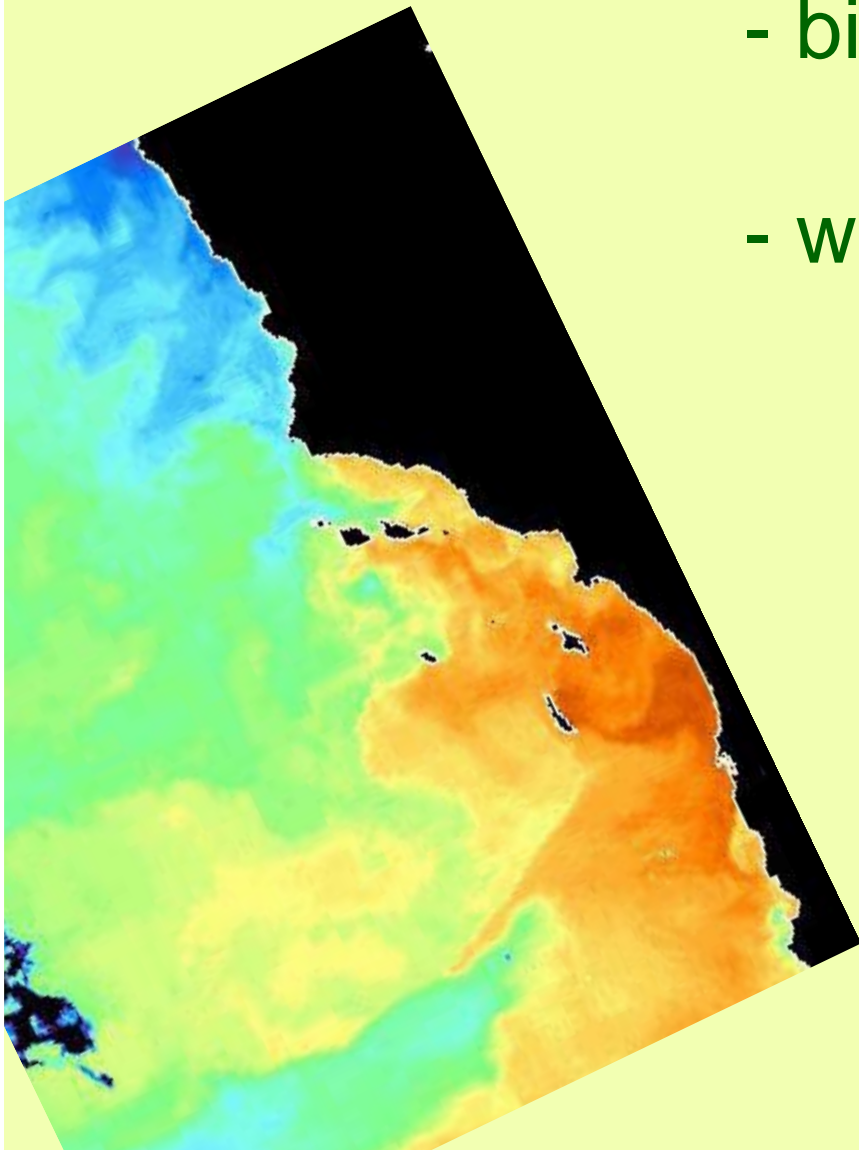
- typical circulation pattern
- variability ...
 - ... predictable currents?
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- features



Southern California Oceanography MLPA SCSR

Habitat

- biogenic water properties
(SST, Chl)
- water quality,
i.e., contaminants



Southern California Oceanography MLPA SCSR

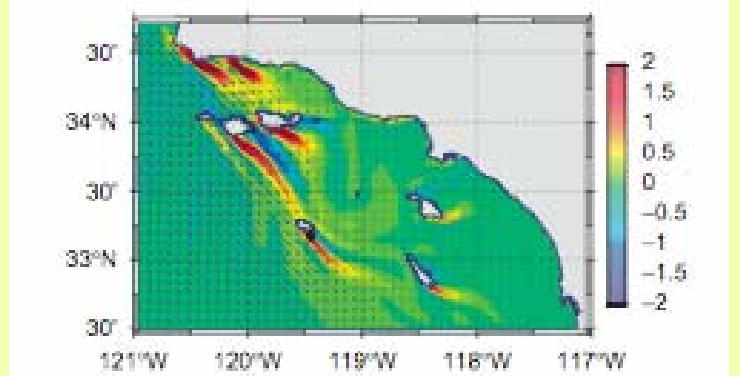
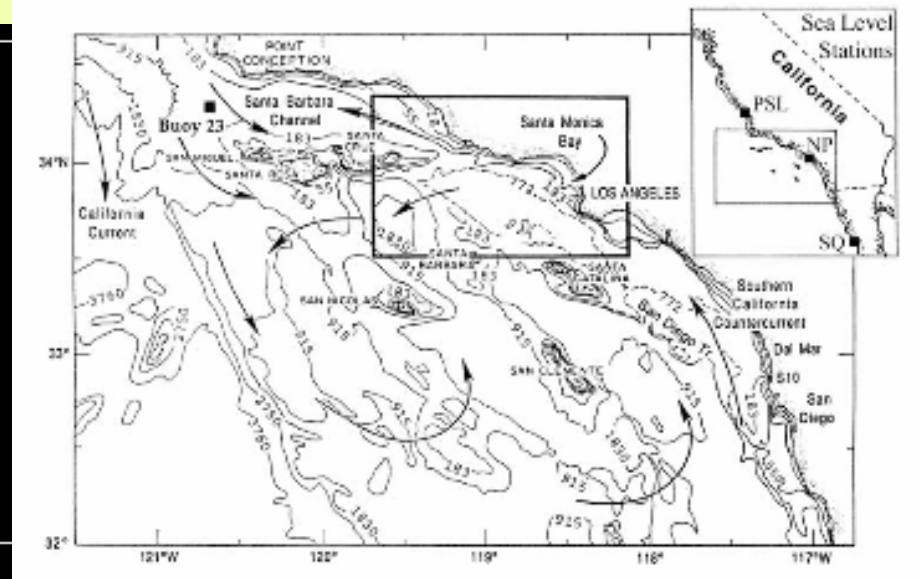
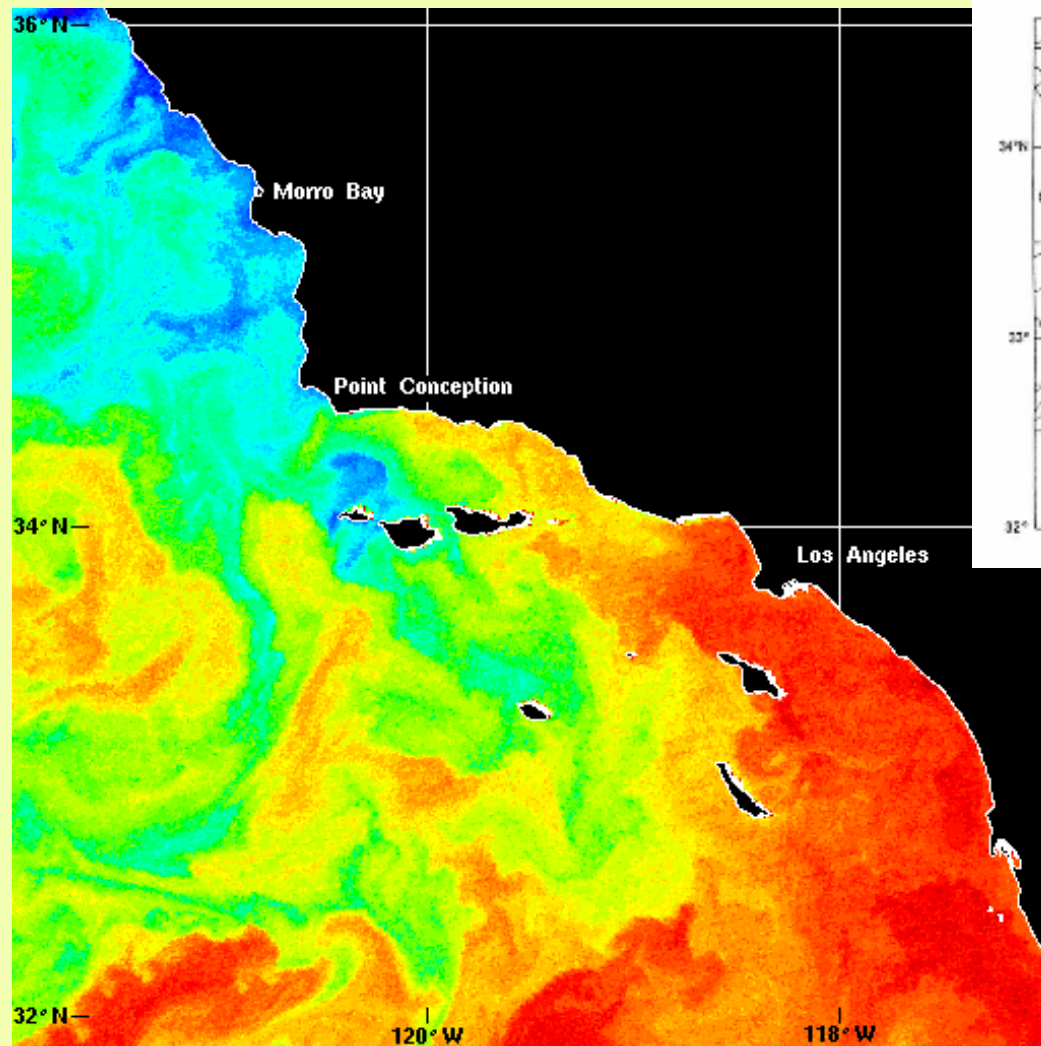
Habitat

- biogenic water properties (SST, Chl)
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Large-scale circulation

schematic (Hickey 1992, 2003)



wind stress curl (Dong & McW 2007)

Large-scale circulation

Seasonal evolution ...

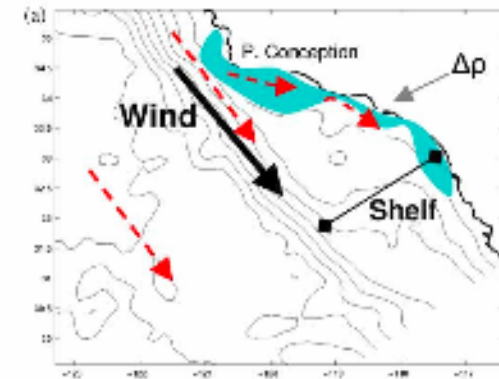
... spring: winds & upwelling

... summer: winds relax inshore,
curl & Ekman pumping,
SC Counter-current
Southern California Eddy

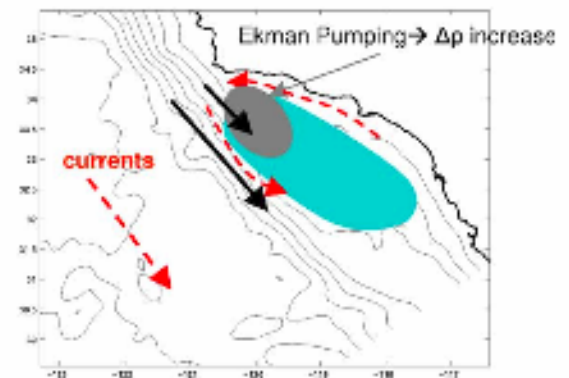
... fall: broadening recirculation
becomes unstable

seasonal dynamics (Di Lorenzo 2003)

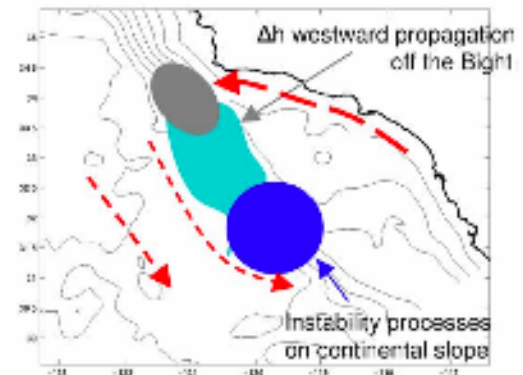
Spring: Stronger Upwelling winds



(b) Early Summer: Stronger positive wind stress curl

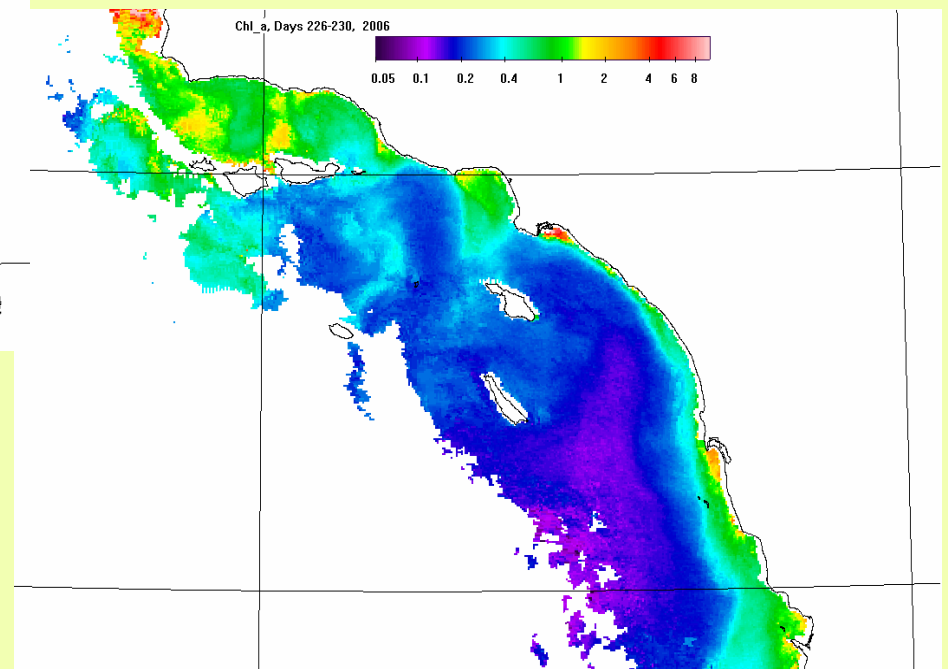
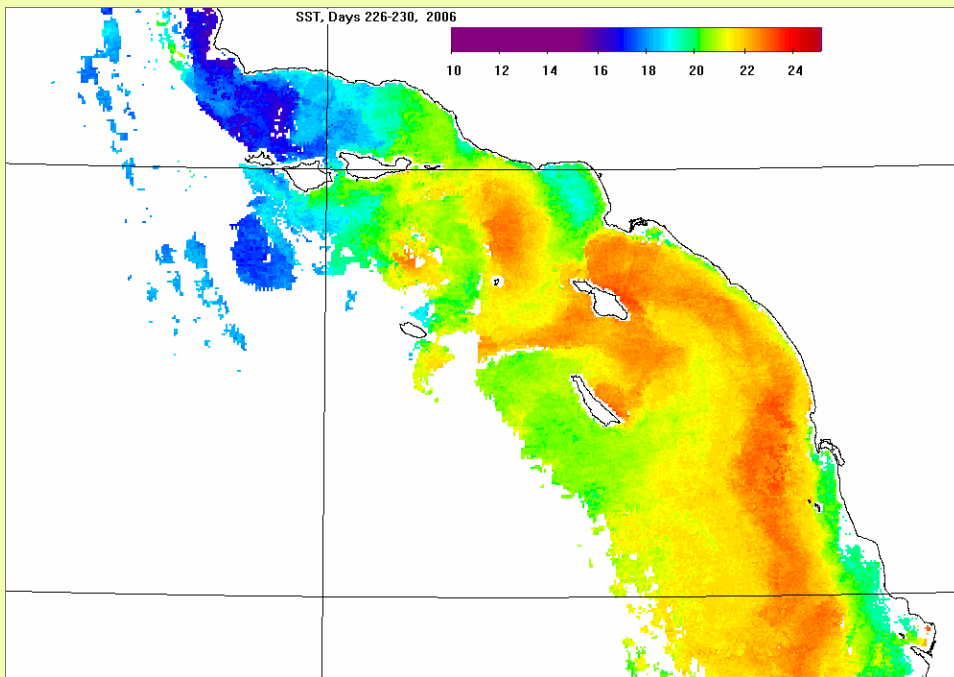


(c) End of Summer/Early Fall: Wind relaxation



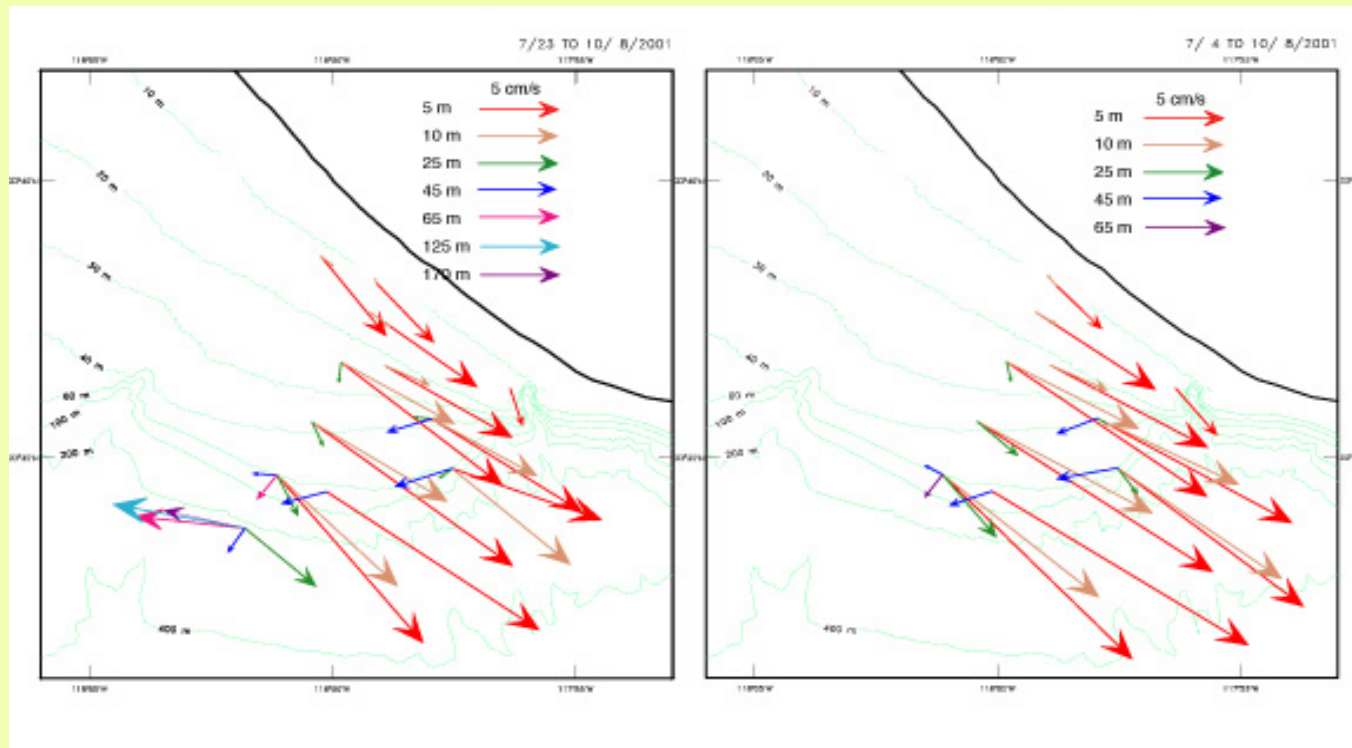
Multiple scales of patterns ...

SBC, SMB, islands,
upwelling, ...



Shelf currents

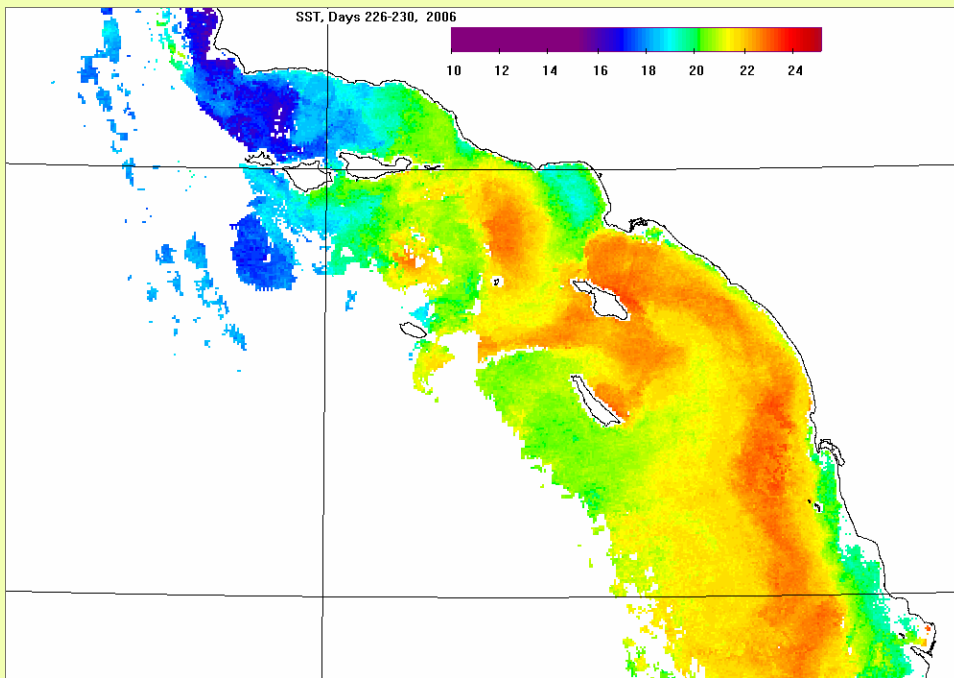
Southward currents over the shelf ...
reversing at times (Oct-Nov?)



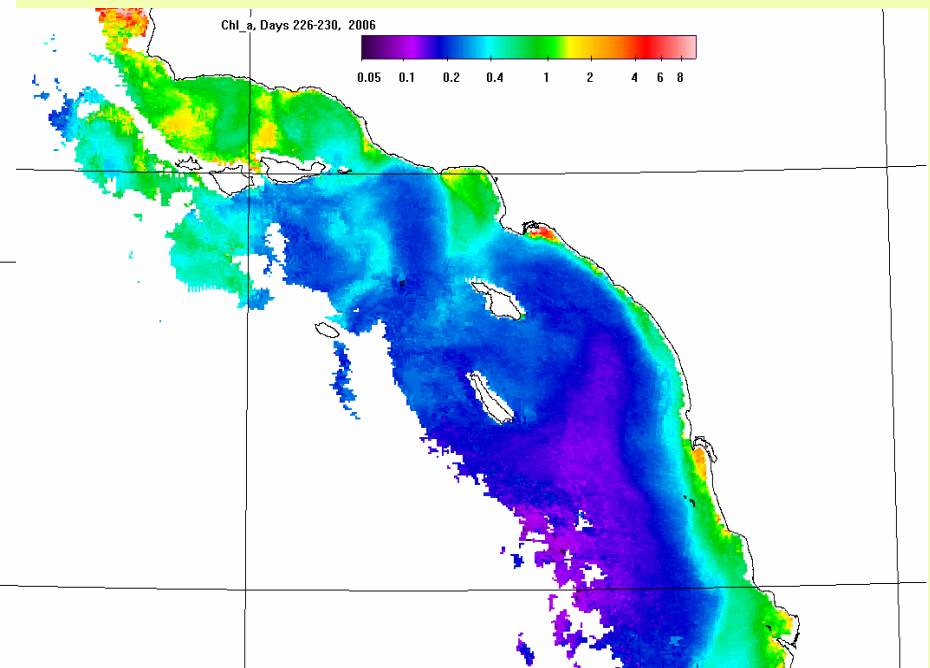
Huntington Beach (Noble et al 2004)

Upwelling

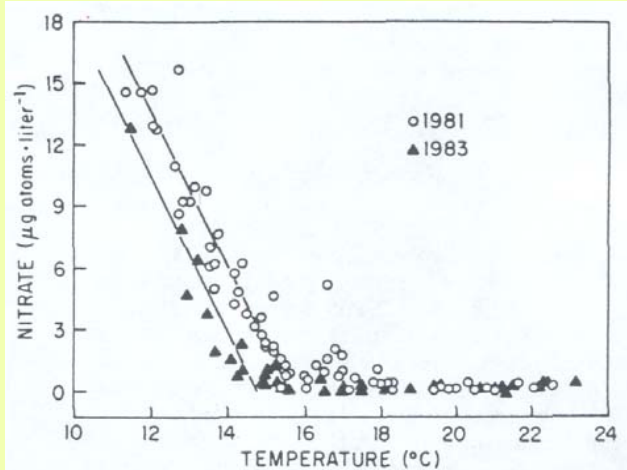
Shallow thermocline
throughout SCB,
breaks surface at
specific times & places



Pt Conception, Pt Dume,
Palos Verdes, Pt Loma,
S of border

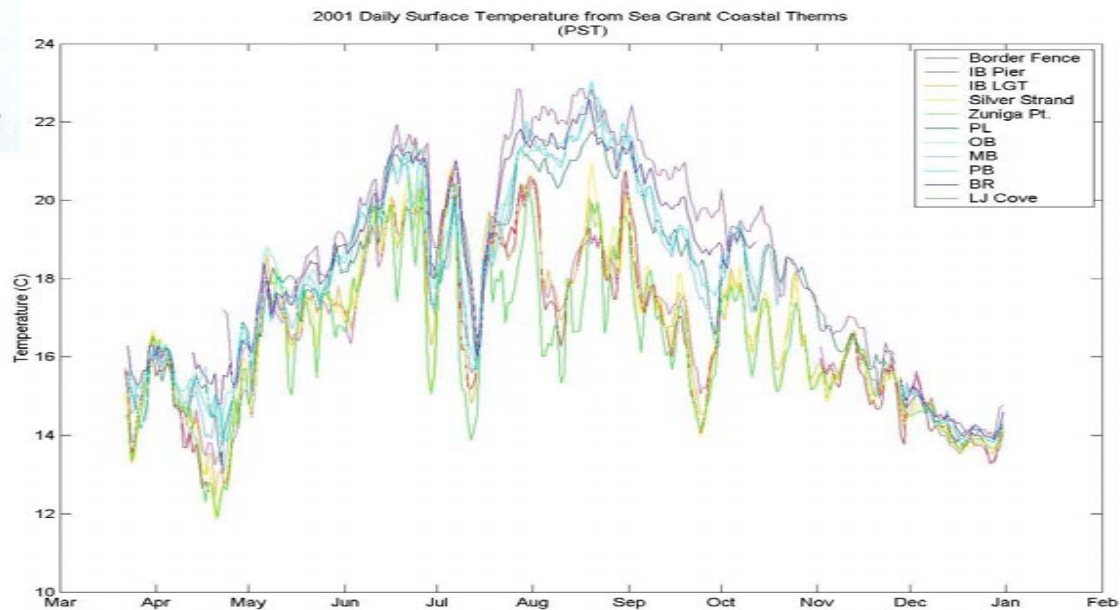


Upwelling



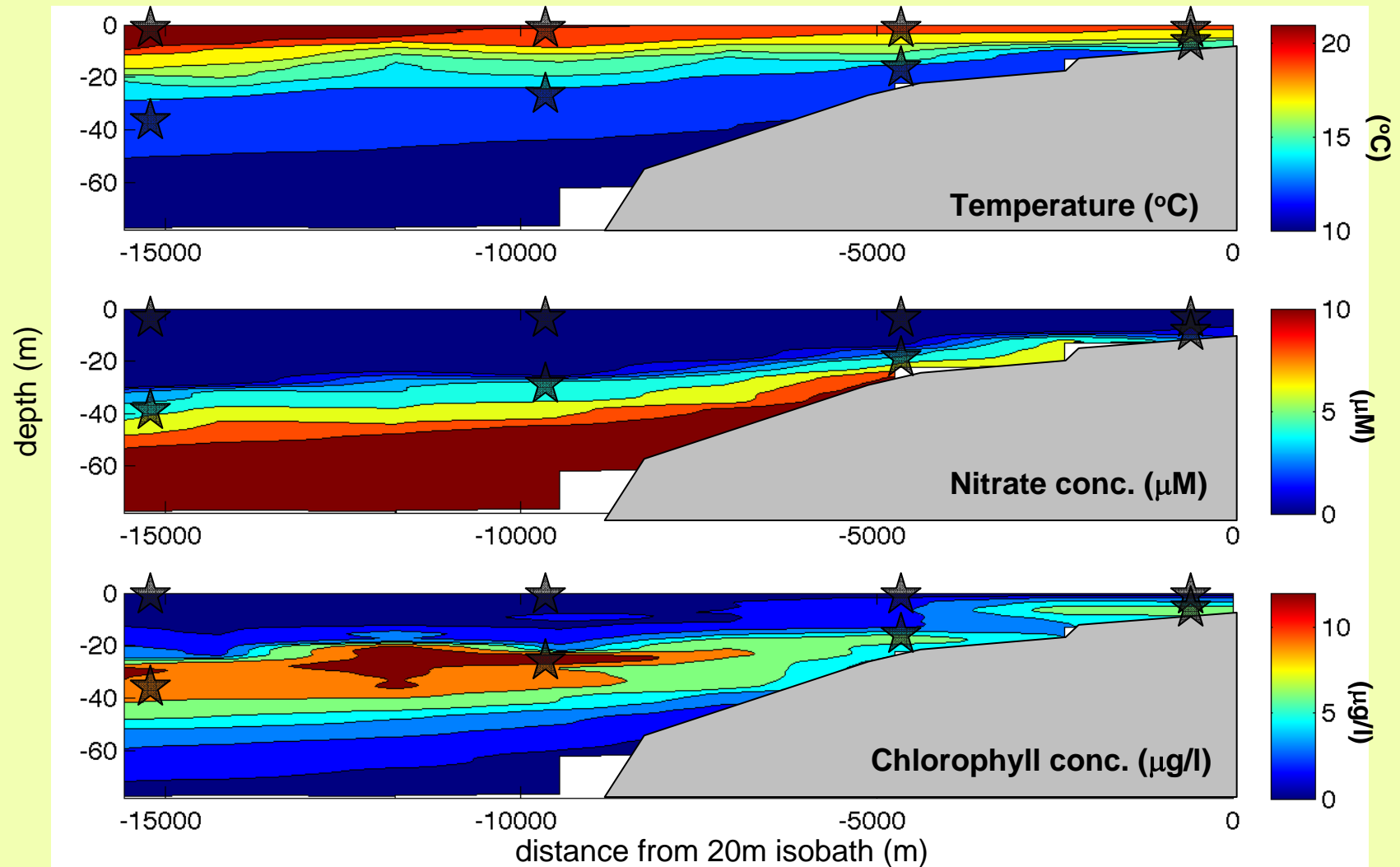
Zimmerman

Thermistors N and S of Pt Loma



Upwelling ... Shallow thermocline with Chl max

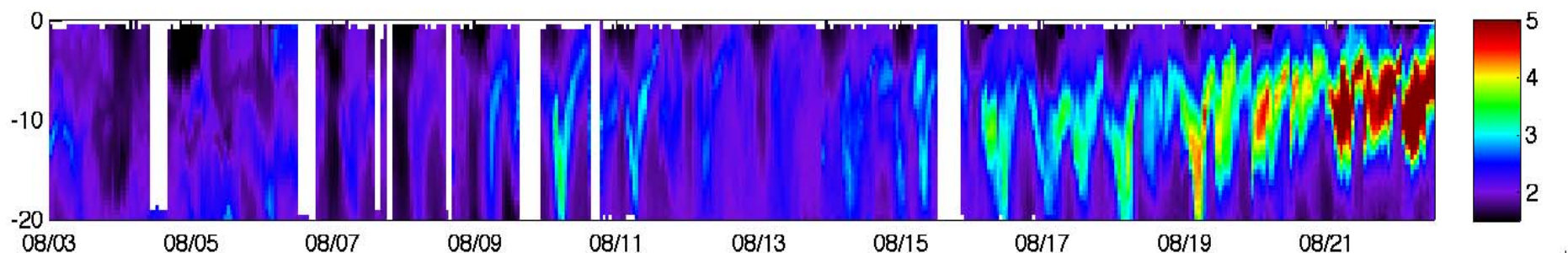
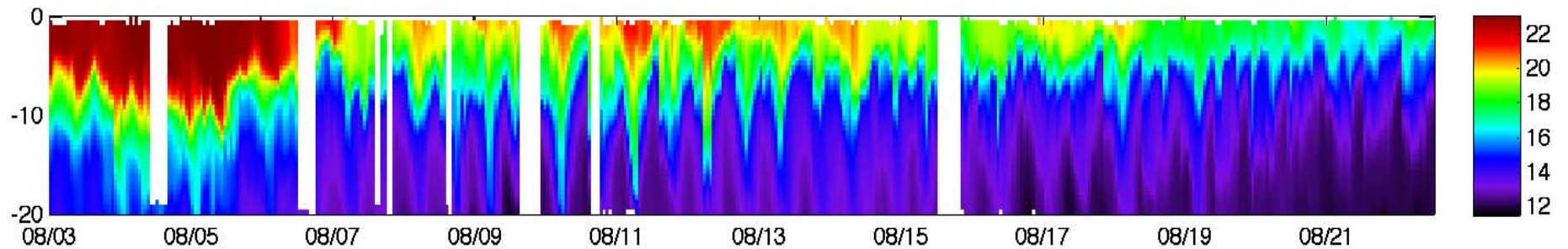
Cross-shore transects, shelf break to the inner shelf :



Drew Lucas data (unpubl.)

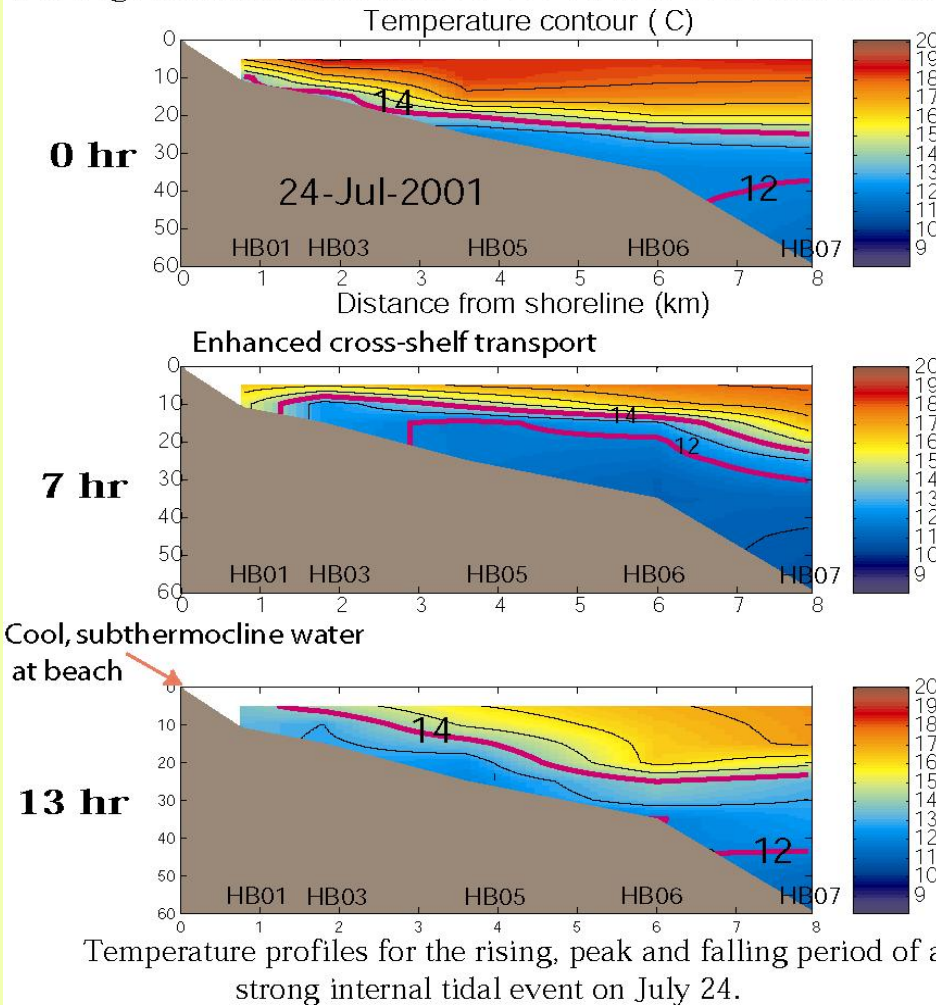
Internal Waves ... and other HF motions

Temperature, fluorescence, (08/03 - 08/23/2006; 25 m WW):



Internal Waves ... and other HF motions

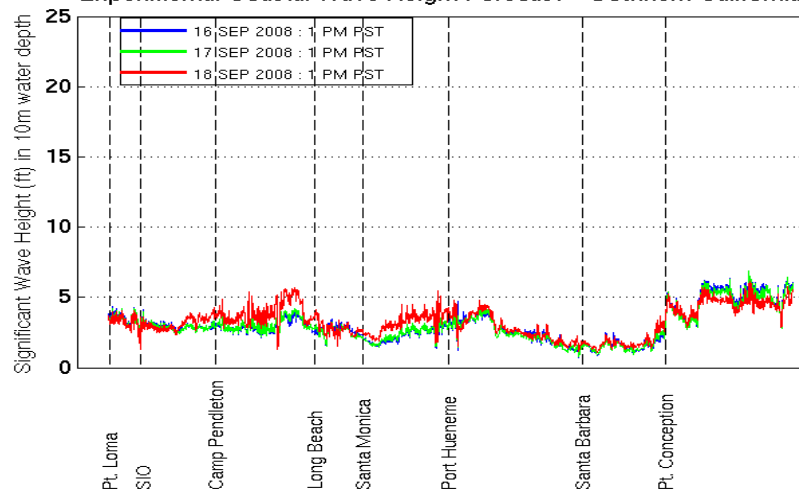
Strong internal tides caused cool water to reach the nearshore.



Southern California Oceanography MLPA SCSR

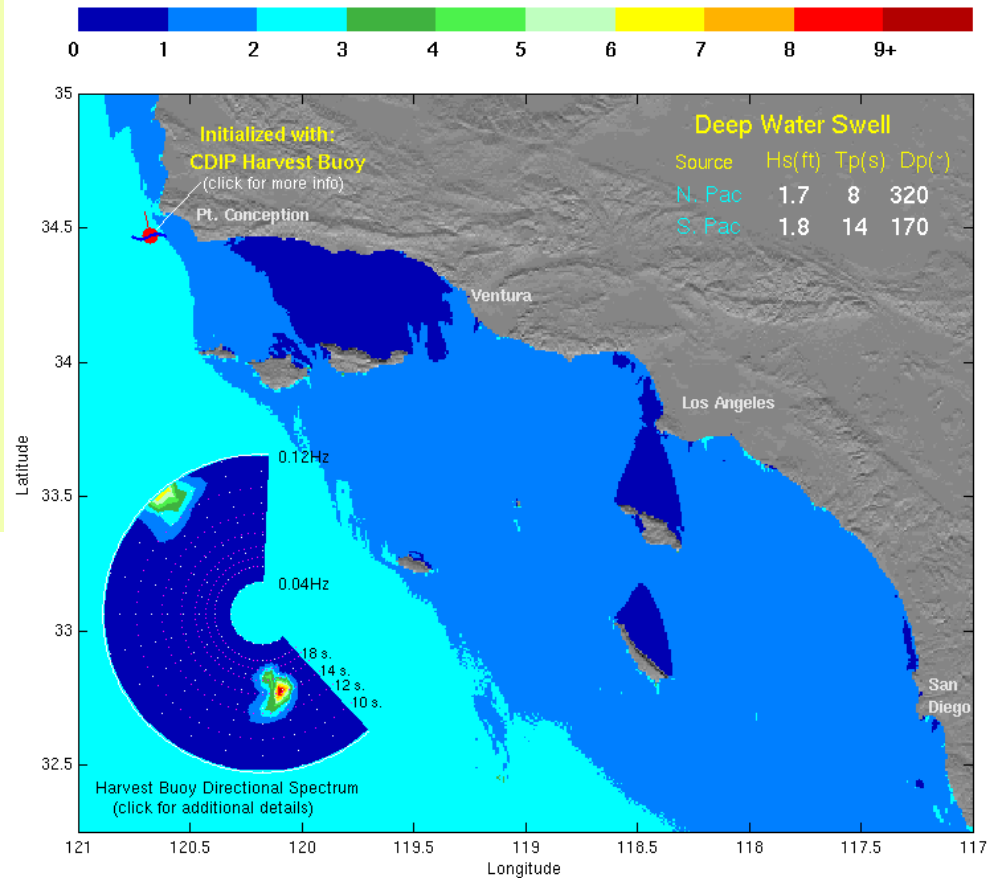
Waves

Experimental Coastal Wave Height Forecast – Southern California



Analysis Time – 15 SEP 2008 : 1633 PST

Swell Height (ft) – Southern California Bight



Additional Information @ <http://cdip.ucsd.edu/>



California Department
of
Boating and Waterways



U.S. Army Corps of Engineers
Field Wave Gaging Program



Office of Naval Research
Advanced Wave
Prediction Program

River and tidal plumes



Southern California Oceanography MLPA SCSR

River and tidal plumes

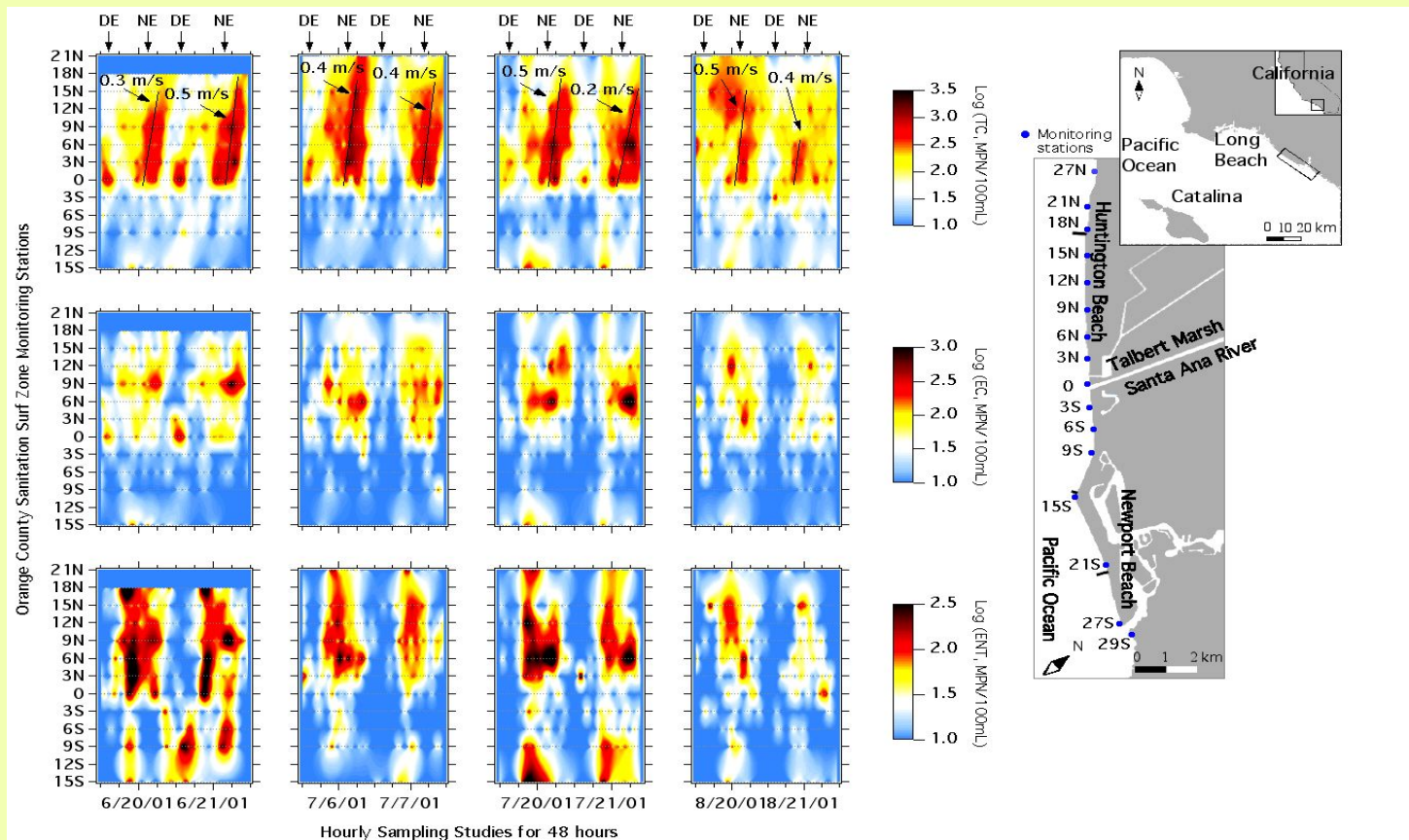
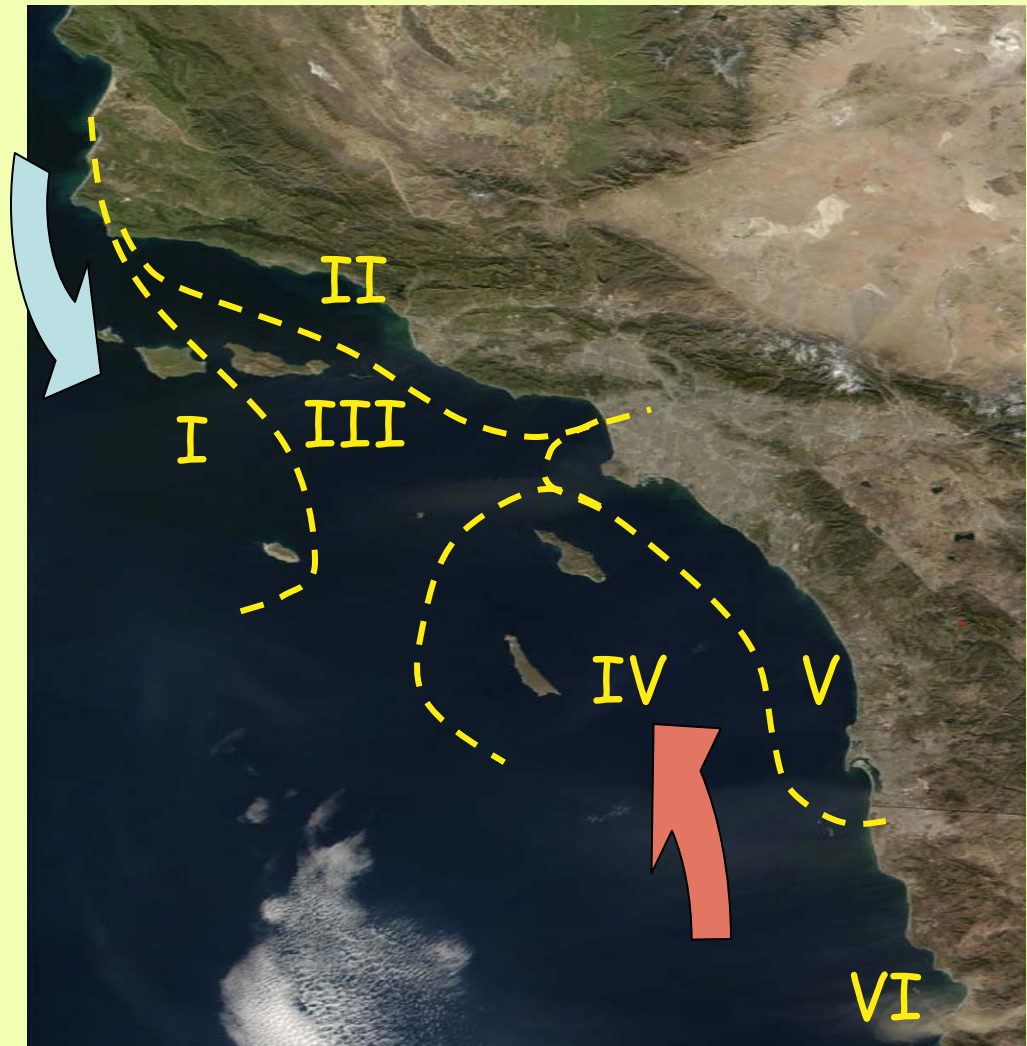


Figure 2
Kim *et al.*

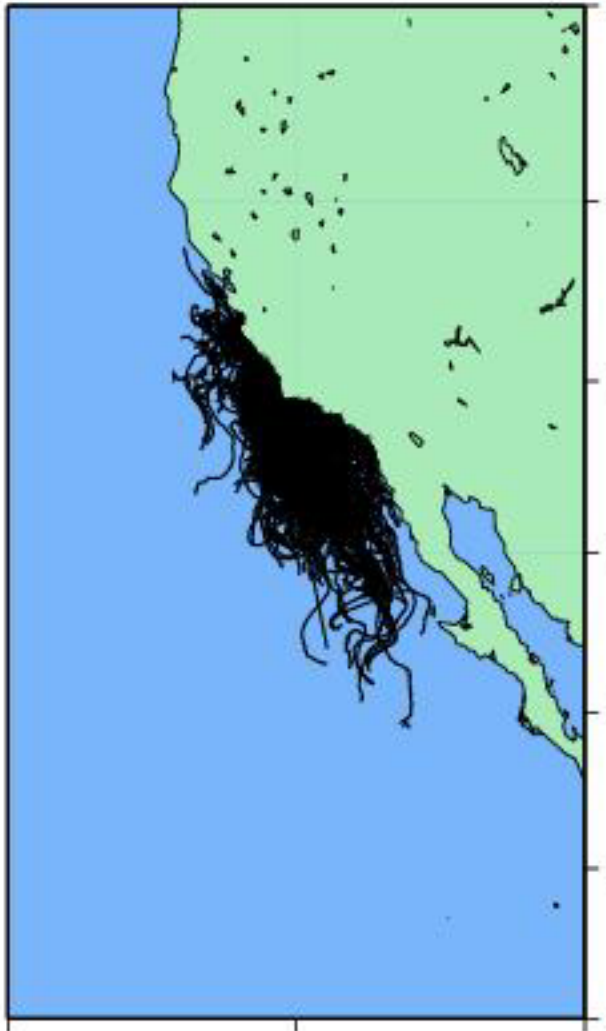
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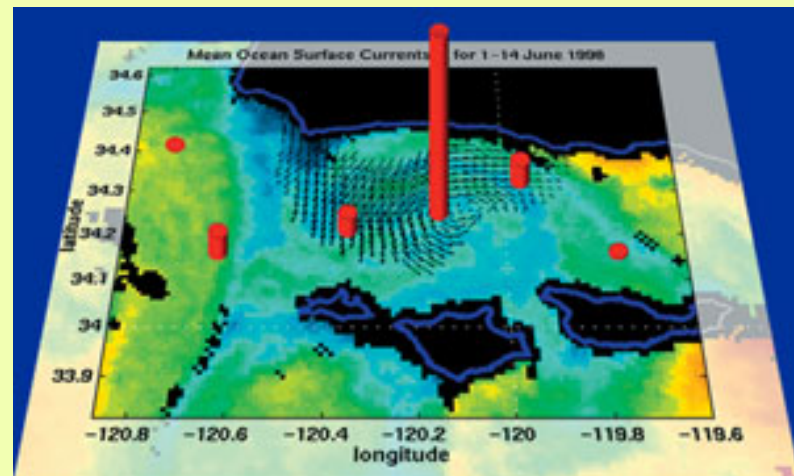
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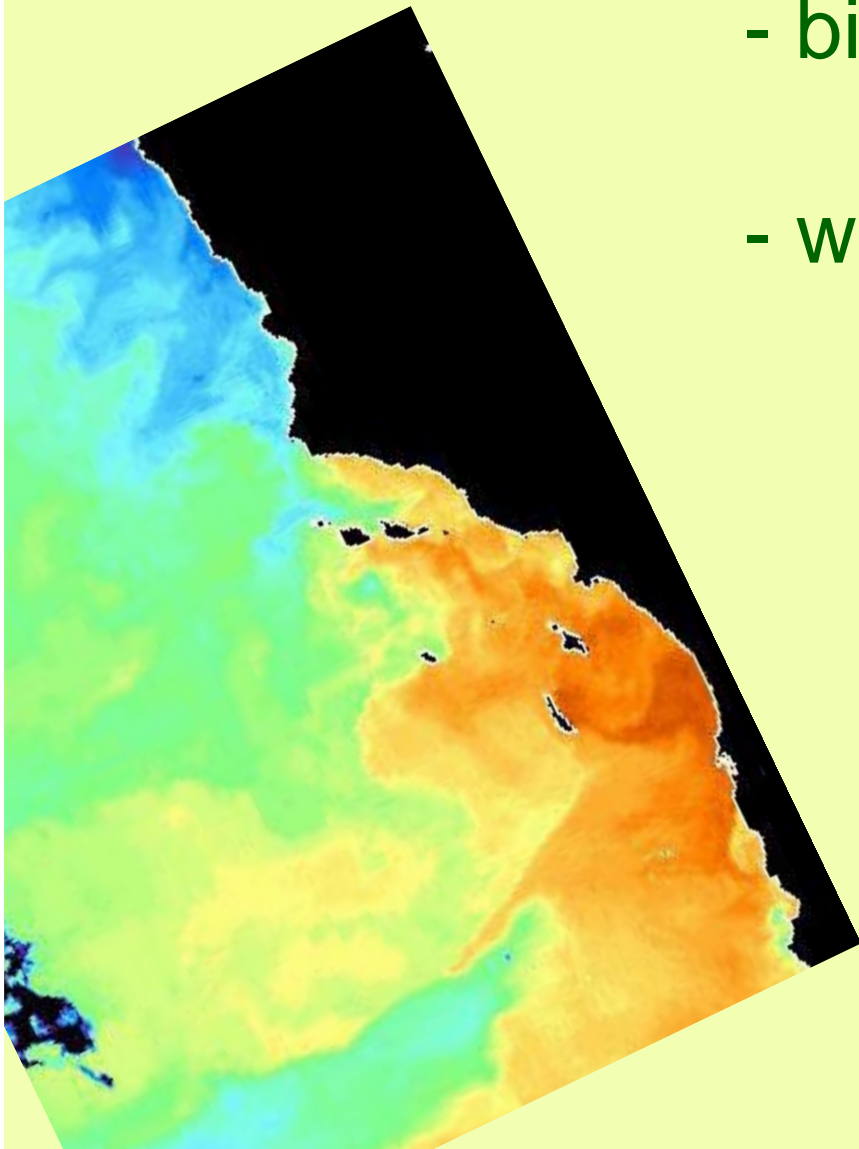
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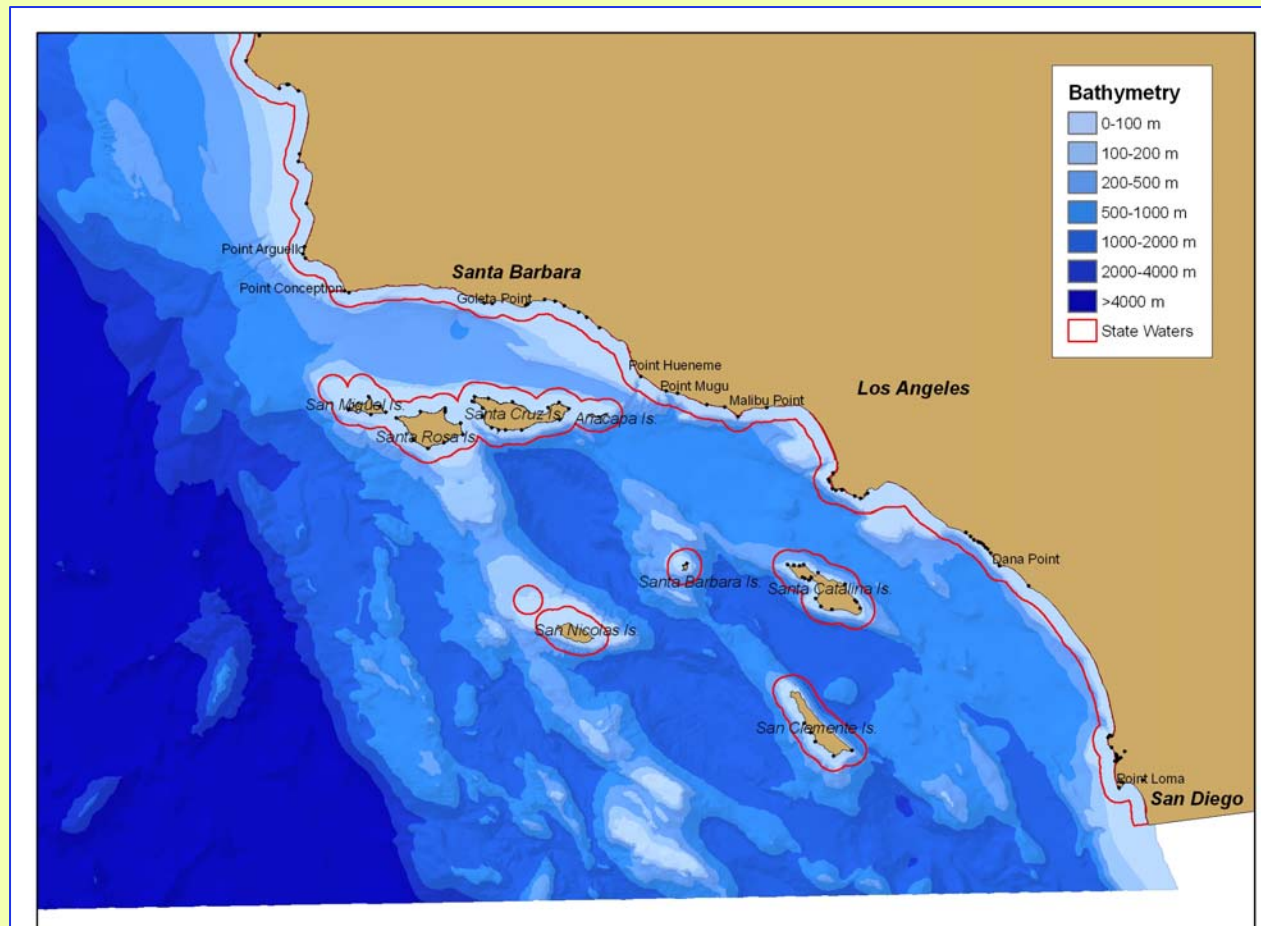
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